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RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/432,820

DATE: 07/19/2001
 TIME: 15:45:44

Input Set : A:\A57004-4.ST25.txt
 Output Set: N:\CRF3\07192001\I432820.raw

5 <110> APPLICANT: Kapoor, Archana
 6 Munshi, Anil
 9 <120> TITLE OF INVENTION: MEMBRANE-ASSOCIATED IMMUNOGENS OF MYCOBACTERIA
 12 <130> FILE REFERENCE: A-57004-4/RFT/JJD
 15 <140> CURRENT APPLICATION NUMBER: US 09/432,820
 16 <141> CURRENT FILING DATE: 1999-11-02
 18 <150> PRIOR APPLICATION NUMBER: US 09/099,902
 19 <151> PRIOR FILING DATE: 1998-06-18
 21 <150> PRIOR APPLICATION NUMBER: US 08/710,676
 22 <151> PRIOR FILING DATE: 1996-09-23
 24 <150> PRIOR APPLICATION NUMBER: US 08/192,632
 25 <151> PRIOR FILING DATE: 1994-02-07
 27 <150> PRIOR APPLICATION NUMBER: US 07/906,395
 28 <151> PRIOR FILING DATE: 1992-06-29
 30 <160> NUMBER OF SEQ ID NOS: 2
 32 <170> SOFTWARE: PatentIn version 3.0
 35 <210> SEQ ID NO: 1
 36 <211> LENGTH: 3250
 37 <212> TYPE: DNA
 38 <213> ORGANISM: Mycobacterium bovis
 40 <220> FEATURE:
 41 <221> NAME/KEY: CDS
 42 <222> LOCATION: (508)..(2790)
 45 <400> SEQUENCE: 1
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 50 cgggtgaccaa taccttccact gcgagcgac ccgcaaccgg ctgcaccacg aactcggcgg 180
 52 tatggccgctc gaaatggaag gcggtgcggt ggcgcaaata tgcgcgtcct tcgatatccc 240
 54 atggctggctc attcgcgcgc tctccgatct cgccggagcc gattcggggg tggacttcaa 300
 56 tcggtttgtc ggcgagggtg cggccagttc ggcccgcgtt ctgctgcgct tgcgtccggt 360
 58 gttgacggcc tgttgaagac gactatccgc cgggtgcgtt accgcgtcag gcggcttcgg 420
 60 tgaggtgagt aatttggtca ttaacttggt catgccgccg ccgatgttga gcggaggcca 480
 62 caggtcggcc ggaagtgagg agccacg atg acg gcg gcc gtg acc ggt gaa cac 534
 63 Met Thr Ala Ala Val Thr Gly Glu His
 64 1 5
 66 cac gcg agt gtg cag cgg ata caa ctc aga atc agc ggg atg tcg tgc 582
 67 His Ala Ser Val Gln Arg Ile Gln Leu Arg Ile Ser Gly Met Ser Cys
 68 10 15 20 25
 70 tct gcg tgc gcc cac cgt gtg gaa tcg acc ctc aac aag ctg ccg ggg 630
 71 Ser Ala Cys Ala His Arg Val Glu Ser Thr Leu Asn Lys Leu Pro Gly
 72 30 35 40
 74 gtt cgg gca gct gtg aac ttc ggc acc cgg gtg gca acc atc gac acc 678
 75 Val Arg Ala Ala Val Asn Phe Gly Thr Arg Val Ala Thr Ile Asp Thr
 76 45 50 55
 78 agc gag gcg gtc gac gct gcc gcg ctg tgc cag gcg gtc cgc cgc gcg 726
 79 Ser Glu Ala Val Asp Ala Ala Ala Leu Cys Gln Ala Val Arg Arg Ala
 80 60 65 70

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| | | |
|-----|---|------|
| 82 | ggc tat cag gcc gat ctg tgc acg gat gac ggt cgg agc gcg agt gat | 774 |
| 83 | Gly Tyr Gln Ala Asp Leu Cys Thr Asp Asp Gly Arg Ser Ala Ser Asp | |
| 84 | 75 80 85 | |
| 86 | ccg gac gcc gac cac gct cga cag ctg ctg atc cgg cta gcg atc gcc | 822 |
| 87 | Pro Asp Ala Asp His Ala Arg Gln Leu Leu Ile Arg Leu Ala Ile Ala | |
| 88 | 90 95 100 105 | |
| 90 | gcc gtg ctg ttt gtg ccc gtg gcc gat ctg tcg gtg atg ttt ggg gtc | 870 |
| 91 | Ala Val Leu Phe Val Pro Val Ala Asp Leu Ser Val Met Phe Gly Val | |
| 92 | 110 115 120 | |
| 94 | gtg cct gcc acg cgc ttc acc ggc tgg cag tgg gtg cta agc gcg ctg | 918 |
| 95 | Val Pro Ala Thr Arg Phe Thr Gly Trp Gln Trp Val Leu Ser Ala Leu | |
| 96 | 125 130 135 | |
| 98 | gca ctg ccg gtc gtg acc tgg gcg gcg tgg ccg ttt cac cgc gtt gcg | 966 |
| 99 | Ala Leu Pro Val Val Thr Trp Ala Ala Trp Pro Phe His Arg Val Ala | |
| 100 | 140 145 150 | |
| 102 | atg cgc aac gcc cgc cac cac gcc gcc tcc atg gag acg cta atc tcg | 1014 |
| 103 | Met Arg Asn Ala Arg His His Ala Ala Ser Met Glu Thr Leu Ile Ser | |
| 104 | 155 160 165 | |
| 106 | gtc ggt atc acg gcc gcc acg atc tgg tcg ctg tac acc gtc ttc ggc | 1062 |
| 107 | Val Gly Ile Thr Ala Ala Thr Ile Trp Ser Leu Tyr Thr Val Phe Gly | |
| 108 | 170 175 180 185 | |
| 110 | aat cac tcg ccc atc gag cgc agc ggc ata tgg cag gcg ctg ctg gga | 1110 |
| 111 | Asn His Ser Pro Ile Glu Arg Ser Gly Ile Trp Gln Ala Leu Leu Gly | |
| 112 | 190 195 200 | |
| 114 | agc gat gct att tat ttc gag gtc gcg gcg ggt gtc acg gtg ttc gtg | 1158 |
| 115 | Ser Asp Ala Ile Tyr Phe Glu Val Ala Ala Gly Val Thr Val Phe Val | |
| 116 | 205 210 215 | |
| 118 | ctg gtg ggg cgg tat ttc gag gcg cgc gcc aag tcg cag gcg ggc agt | 1206 |
| 119 | Leu Val Gly Arg Tyr Phe Glu Ala Arg Ala Lys Ser Gln Ala Gly Ser | |
| 120 | 220 225 230 | |
| 122 | gcg ctg aga gcc ttg gcg gcg ctg agc gcc aag gaa gta gcc gtc ctg | 1254 |
| 123 | Ala Leu Arg Ala Leu Ala Ala Leu Ser Ala Lys Glu Val Ala Val Leu | |
| 124 | 235 240 245 | |
| 126 | cta ccg gat ggg tcg gag atg gtc atc ccg gcc gac gaa ctc aaa gaa | 1302 |
| 127 | Leu Pro Asp Gly Ser Glu Met Val Ile Pro Ala Asp Glu Leu Lys Glu | |
| 128 | 250 255 260 265 | |
| 130 | cag cag cgc ttc gtg gtg cgt cca ggg cag ata gtt gcc gcc gac ggc | 1350 |
| 131 | Gln Gln Arg Phe Val Val Arg Pro Gly Gln Ile Val Ala Ala Asp Gly | |
| 132 | 270 275 280 | |
| 134 | ctc gcc gtc gac ggg tcc gct gcg gtc gac atg agc gcg atg acc ggc | 1398 |
| 135 | Leu Ala Val Asp Gly Ser Ala Ala Val Asp Met Ser Ala Met Thr Gly | |
| 136 | 285 290 295 | |
| 138 | gag gcc aaa ccg acc cgg gtg cgt ccg ggg ggg cag gtc atc ggc ggc | 1446 |
| 139 | Glu Ala Lys Pro Thr Arg Val Arg Pro Gly Gly Gln Val Ile Gly Gly | |
| 140 | 300 305 310 | |
| 142 | acc aca gtg ctt gac ggc cgg ctg atc gtg gag gcg gcc gcg gtg ggc | 1494 |
| 143 | Thr Thr Val Leu Asp Gly Arg Leu Ile Val Glu Ala Ala Ala Val Gly | |
| 144 | 315 320 325 | |
| 146 | gcc gac acc cag ttc gcc gga atg gtc cgc ctc gtt gag caa gcg cag | 1542 |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 147 | Ala | Asp | Thr | Gln | Phe | Ala | Gly | Met | Val | Arg | Leu | Val | Glu | Gln | Ala | Gln | |
| 148 | 330 | | | | | 335 | | | | | 340 | | | | | 345 | |
| 150 | gcg | caa | aag | gcc | gac | gca | cag | cga | cta | gcc | gac | cgg | atc | tcc | tcg | gtg | 1590 |
| 151 | Ala | Gln | Lys | Ala | Asp | Ala | Gln | Arg | Leu | Ala | Asp | Arg | Ile | Ser | Ser | Val | |
| 152 | | | | 350 | | | | | | 355 | | | | | 360 | | |
| 154 | ttt | gtt | ccc | gct | gtg | ttg | gtt | atc | gcg | gca | cta | acc | gca | gcc | gga | tgg | 1638 |
| 155 | Phe | Val | Pro | Ala | Val | Leu | Val | Ile | Ala | Ala | Leu | Thr | Ala | Ala | Gly | Trp | |
| 156 | | | | 365 | | | | | 370 | | | | | 375 | | | |
| 158 | cta | atc | gcc | ggg | gga | caa | ccc | gac | cgt | gcc | gtc | tcg | gcc | gca | ctc | gcc | 1686 |
| 159 | Leu | Ile | Ala | Gly | Gly | Gln | Pro | Asp | Arg | Ala | Val | Ser | Ala | Ala | Leu | Ala | |
| 160 | | | 380 | | | | | 385 | | | | | 390 | | | | |
| 162 | gtg | ctt | gtc | atc | gcc | tgc | ccg | tgt | gcc | ctg | ggg | ctg | gcg | act | ccg | acc | 1734 |
| 163 | Val | Leu | Val | Ile | Ala | Cys | Pro | Cys | Ala | Leu | Gly | Leu | Ala | Thr | Pro | Thr | |
| 164 | | 395 | | | | 400 | | | | | 405 | | | | | | |
| 166 | gcg | atg | atg | gtg | gcc | tct | ggt | cgc | ggt | gcc | cag | ctc | gga | ata | ttt | ctg | 1782 |
| 167 | Ala | Met | Met | Val | Ala | Ser | Gly | Arg | Gly | Ala | Gln | Leu | Gly | Ile | Phe | Leu | |
| 168 | 410 | | | | 415 | | | | 420 | | | | | | 425 | | |
| 170 | aag | ggc | tac | aaa | tcg | ttg | gag | gcc | acc | cgc | gcg | gtg | gac | acc | gtc | gtc | 1830 |
| 171 | Lys | Gly | Tyr | Lys | Ser | Leu | Glu | Ala | Thr | Arg | Ala | Val | Asp | Thr | Val | Val | |
| 172 | | | | 430 | | | | | 435 | | | | | 440 | | | |
| 174 | ttc | gac | aag | acc | ggc | acc | ctg | acg | acg | ggc | cgg | ctg | cag | gtc | agt | gcg | 1878 |
| 175 | Phe | Asp | Lys | Thr | Gly | Thr | Leu | Thr | Thr | Gly | Arg | Leu | Gln | Val | Ser | Ala | |
| 176 | | | 445 | | | | | 450 | | | | | 455 | | | | |
| 178 | gtg | acc | gcg | gca | ccg | ggc | tgg | gag | gcc | gac | cag | gtg | ctc | gcc | ttg | gcc | 1926 |
| 179 | Val | Thr | Ala | Ala | Pro | Gly | Trp | Glu | Ala | Asp | Gln | Val | Leu | Ala | Leu | Ala | |
| 180 | | 460 | | | | 465 | | | | | | 470 | | | | | |
| 182 | gcg | acc | gtg | gaa | gcc | gcg | tcc | gag | cac | tcg | gtg | gcg | ctc | gcg | atc | gcc | 1974 |
| 183 | Ala | Thr | Val | Glu | Ala | Ala | Ser | Glu | His | Ser | Val | Ala | Leu | Ala | Ile | Ala | |
| 184 | | 475 | | | | 480 | | | | | 485 | | | | | | |
| 186 | gcg | gca | acg | act | cgg | cga | gac | gcg | gtc | acc | gac | ttt | cgc | gcc | ata | ccc | 2022 |
| 187 | Ala | Ala | Thr | Thr | Arg | Arg | Asp | Ala | Val | Thr | Asp | Phe | Arg | Ala | Ile | Pro | |
| 188 | 490 | | | | 495 | | | | 500 | | | | | | 505 | | |
| 190 | ggc | cgc | ggc | gtc | agc | ggc | acc | gtg | tcc | ggg | cgg | gcg | gta | cgg | gtg | ggc | 2070 |
| 191 | Gly | Arg | Gly | Val | Ser | Gly | Thr | Val | Ser | Gly | Arg | Ala | Val | Arg | Val | Gly | |
| 192 | | | | 510 | | | | | 515 | | | | | 520 | | | |
| 194 | aaa | ccg | tca | tgg | atc | ggg | tcc | tcg | tcg | tgc | cac | ccc | aac | atg | cgc | gcg | 2118 |
| 195 | Lys | Pro | Ser | Trp | Ile | Gly | Ser | Ser | Ser | Cys | His | Pro | Asn | Met | Arg | Ala | |
| 196 | | | 525 | | | | | 530 | | | | | 535 | | | | |
| 198 | gcc | cgg | cgc | cac | gcc | gaa | tcg | ctg | ggt | gag | acg | gcc | gta | ttc | gtc | gag | 2166 |
| 199 | Ala | Arg | Arg | His | Ala | Glu | Ser | Leu | Gly | Glu | Thr | Ala | Val | Phe | Val | Glu | |
| 200 | | 540 | | | | 545 | | | | | | 550 | | | | | |
| 202 | gtc | gac | ggc | gaa | cca | tgc | ggg | gtc | atc | gcg | gtc | gcc | gac | gcc | gtc | aag | 2214 |
| 203 | Val | Asp | Gly | Glu | Pro | Cys | Gly | Val | Ile | Ala | Val | Ala | Asp | Ala | Val | Lys | |
| 204 | | 555 | | | | 560 | | | | | 565 | | | | | | |
| 206 | gac | tcg | gcg | cga | gac | gcc | gtg | gcc | gcc | ctg | gcc | gat | cgt | ggt | ctg | cgc | 2262 |
| 207 | Asp | Ser | Ala | Arg | Asp | Ala | Val | Ala | Ala | Leu | Ala | Asp | Arg | Gly | Leu | Arg | |
| 208 | 570 | | | | 575 | | | | 580 | | | | | | 585 | | |
| 210 | acc | atg | ctg | ttg | acc | ggt | gac | aat | ccc | gaa | tcg | gcg | gcg | gcc | gtg | gct | 2310 |
| 211 | Thr | Met | Leu | Leu | Thr | Gly | Asp | Asn | Pro | Glu | Ser | Ala | Ala | Ala | Val | Ala | |

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212          590          595          600
214 act cgc gtc ggc atc gac gag gtg atc gcc gac atc ctg ccg gaa ggc      2358
215 Thr Arg Val Gly Ile Asp Glu Val Ile Ala Asp Ile Leu Pro Glu Gly
216          605          610          615
218 aag gtc gat gtc atc gag cag cta cgc gac cgc gga cat gtc gtc gcc      2406
219 Lys Val Asp Val Ile Glu Gln Leu Arg Asp Arg Gly His Val Val Ala
220          620          625          630
222 atg gtc ggt gac ggc atc aac gac gga ccc gca ctg gcc cgt gcc gat      2454
223 Met Val Gly Asp Gly Ile Asn Asp Gly Pro Ala Leu Ala Arg Ala Asp
224          635          640          645
226 cta ggc atg gcc atc ggg cgc ggc acg gac gtc gcg atc ggt gcc gcc      2502
227 Leu Gly Met Ala Ile Gly Arg Gly Thr Asp Val Ala Ile Gly Ala Ala
228 650          655          660          665
230 gac atc atc ttg gtc cgc gac cac ctc gac gtt gta ccc ctt gcg ctt      2550
231 Asp Ile Ile Leu Val Arg Asp His Leu Asp Val Val Pro Leu Ala Leu
232          670          675          680
234 gac ctg gca agg gcc acg atg cgc acc gtc aaa ctc aac atg gtc tgg      2598
235 Asp Leu Ala Arg Ala Thr Met Arg Thr Val Lys Leu Asn Met Val Trp
236          685          690          695
238 gca ttc gga tac aac atc gcc gcg att ccc gtc gcc gct gcc gga ctg      2646
239 Ala Phe Gly Tyr Asn Ile Ala Ala Ile Pro Val Ala Ala Ala Gly Leu
240          700          705          710
242 ctc aac ccc ctg gtg gcc ggt gcg gcc atg gcg ttc tca tcg ttc ttc      2694
243 Leu Asn Pro Leu Val Ala Gly Ala Ala Met Ala Phe Ser Ser Phe Phe
244          715          720          725
246 gtg gtc tca aac agc ttg cgg ttg cgc aaa ttt ggg cga tac ccg cta      2742
247 Val Val Ser Asn Ser Leu Arg Leu Arg Lys Phe Gly Arg Tyr Pro Leu
248 730          735          740          745
250 ggc tgc gga acc gtc ggt ggg cca caa atg acc gcg ccg tcg tcc gcg      2790
251 Gly Cys Gly Thr Val Gly Gly Pro Gln Met Thr Ala Pro Ser Ser Ala
252          750          755          760
254 tgatgcgttg tcgggcaaca cgatatcggg ctacgcggcg accgcatccg gtctcggccg      2850
256 aggaccagag gcgcttcgcc acaccatgat tgccaggacc gcgccgatca ccaccggcag      2910
258 atgagtcaaa atccgcgttg tgctgaccgc gccggacagc gcatccacaa tcacatagcc      2970
260 ggtcagtatg gcgacgaacg ccgtcagaac accggccagg ccggcggcgg cgctcggcca      3030
262 tagcggccgc cccaccatga tcacaccgag cgcaatcgac cacgacgtga ctcggtgagc      3090
264 aagtgggtgc cggcaccogt cgggtgctga tgggtcaggc cgacgtctag gccaaacccc      3150
266 tgcacggtgc ccagggcgat ctgcgcgatg cccacgcaca gcaacgccca acgtcgccag      3210
268 gtcacggtg aatgttgccg ccgcggcgcc cggcggatcc      3250
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272 <211> LENGTH: 761
273 <212> TYPE: PRT
274 <213> ORGANISM: Mycobacterium bovis
277 <400> SEQUENCE: 2
278 Met Thr Ala Ala Val Thr Gly Glu His His Ala Ser Val Gln Arg Ile
279 1          5          10          15
281 Gln Leu Arg Ile Ser Gly Met Ser Cys Ser Ala Cys Ala His Arg Val
282          20          25          30
284 Glu Ser Thr Leu Asn Lys Leu Pro Gly Val Arg Ala Ala Val Asn Phe

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285          35          40          45
287 Gly Thr Arg Val Ala Thr Ile Asp Thr Ser Glu Ala Val Asp Ala Ala
288      50          55          60
290 Ala Leu Cys Gln Ala Val Arg Arg Ala Gly Tyr Gln Ala Asp Leu Cys
291 65          70          75          80
293 Thr Asp Asp Gly Arg Ser Ala Ser Asp Pro Asp Ala Asp His Ala Arg
294          85          90          95
296 Gln Leu Leu Ile Arg Leu Ala Ile Ala Ala Val Leu Phe Val Pro Val
297          100          105          110
299 Ala Asp Leu Ser Val Met Phe Gly Val Val Pro Ala Thr Arg Phe Thr
300          115          120          125
302 Gly Trp Gln Trp Val Leu Ser Ala Leu Ala Leu Pro Val Val Thr Trp
303      130          135          140
305 Ala Ala Trp Pro Phe His Arg Val Ala Met Arg Asn Ala Arg His His
306 145          150          155          160
308 Ala Ala Ser Met Glu Thr Leu Ile Ser Val Gly Ile Thr Ala Ala Thr
309          165          170          175
311 Ile Trp Ser Leu Tyr Thr Val Phe Gly Asn His Ser Pro Ile Glu Arg
312          180          185          190
314 Ser Gly Ile Trp Gln Ala Leu Leu Gly Ser Asp Ala Ile Tyr Phe Glu
315          195          200          205
317 Val Ala Ala Gly Val Thr Val Phe Val Leu Val Gly Arg Tyr Phe Glu
318          210          215          220
320 Ala Arg Ala Lys Ser Gln Ala Gly Ser Ala Leu Arg Ala Leu Ala Ala
321 225          230          235          240
323 Leu Ser Ala Lys Glu Val Ala Val Leu Leu Pro Asp Gly Ser Glu Met
324          245          250          255
326 Val Ile Pro Ala Asp Glu Leu Lys Glu Gln Gln Arg Phe Val Val Arg
327          260          265          270
329 Pro Gly Gln Ile Val Ala Ala Asp Gly Leu Ala Val Asp Gly Ser Ala
330          275          280          285
332 Ala Val Asp Met Ser Ala Met Thr Gly Glu Ala Lys Pro Thr Arg Val
333          290          295          300
335 Arg Pro Gly Gly Gln Val Ile Gly Gly Thr Thr Val Leu Asp Gly Arg
336 305          310          315          320
338 Leu Ile Val Glu Ala Ala Ala Val Gly Ala Asp Thr Gln Phe Ala Gly
339          325          330          335
341 Met Val Arg Leu Val Glu Gln Ala Gln Ala Gln Lys Ala Asp Ala Gln
342          340          345          350
344 Arg Leu Ala Asp Arg Ile Ser Ser Val Phe Val Pro Ala Val Leu Val
345          355          360          365
347 Ile Ala Ala Leu Thr Ala Ala Gly Trp Leu Ile Ala Gly Gly Gln Pro
348          370          375          380
351 Asp Arg Ala Val Ser Ala Ala Leu Ala Val Leu Val Ile Ala Cys Pro
352 385          390          395          400
354 Cys Ala Leu Gly Leu Ala Thr Pro Thr Ala Met Met Val Ala Ser Gly
355          405          410          415
357 Arg Gly Ala Gln Leu Gly Ile Phe Leu Lys Gly Tyr Lys Ser Leu Glu
358          420          425          430

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